

REMARKS

In the 15 November 2007 *Office Action*, the Examiner rejects Claims 1-5, 7-9, 11-27, and 29-54. In response, Claims 1, 2, 4, 5, 16, 17, 19, 21, 22, 25, 27, 30, 31, 32, 34, 35, 39-44, and 51-54 have been amended to clarify and better describe the present invention. Claim 23 has been cancelled without prejudice or disclaimer. Applicants thank the Examiner with appreciation for the careful consideration and examination given to the Application.

Applicants file this response solely to facilitate prosecution. As such, Applicants reserve the right to present new or additional claims in this Application that have similar or broader scope as originally filed. Applicants also reserve the right to present additional claims in a later-filed continuation application that have similar or broader scope as originally filed.

After entry of this Response, Claims 1-5, 7-8, 11-23, 25-27, and 29-54 are pending in the Application. Applicants respectfully assert that the pending claims are in condition for allowance and respectfully requests reconsideration of the claims in light of the following remarks. No new matter is believed to be introduced into the Application by this submission.

I. Applicant's Drawings Fully Satisfy USPTO Regulations

The Examiner objected to the drawings under 37 CFR 1.83(a), alleging some features in the former claims are not shown in the drawings.

Claims 1, 16, 42, and 43 have been amended for clarity. According to the present application, coefficients representing a transfer function (M) of a microphone are determined *at an identification block 35*, and then coefficients for the filter function (H) are calculated *at a coefficient determination block 36* so that $M \text{ (transfer function)} * H \text{ (filtering function)} = F \text{ (single selected function)}$. Outputs from a signal path (a module) having a microphone 21a and elements 22a and 23a are transferred to *an equalization filter 37*, and filtered using the calculated coefficients for the filter function. *See*, for example, page 11, line 1-page 12, line 6, page 15, lines 1-12, and page 16, lines 15-16 of the description and Fig. 3.

Given the above, it is believed that the drawings (especially Fig. 3) show every feature of the invention specified in the claims. Accordingly, Applicant requests reconsideration and withdrawal of the drawing objections.

II. Applicant's Claims Are Patentable In Accordance With 35 U.S.C. § 112, ¶ 1

The Examiner rejected former claims 1, 42, 43, and 51-54 under 35 U.S.C. §112, first paragraph, for allegedly failing to comply with the enablement requirement.

Claims 1, 16, 42, and 43 have been amended to more clearly define the invention, as discussed above. It is believed that the amended claims 1, 16, 42, and 43 fully comply with 35 U.S.C §112.

Claims 51-54 have been amended for clarity. According to the present application, for each signal path having a microphone, the coefficients for the filtering function (H) are calculated based on the single selected function (F) and the coefficients representing the transfer function (M) of the microphone so that $M*H=F$. The calculated coefficients for the filtering function (H) are provided to the corresponding equalization filter 37. Thus outputs from the equalization filters for the microphones are equalized with respect to phase/amplitude. It is believed that one of ordinary skill in the art could make or use the invention defined in claims 51-54.

Given the above, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. 112, ¶ 1 rejections.

III. Applicant's Claims Are Patentable In Accordance With 35 U.S.C. § 112, ¶ 2

The Examiner rejected former claims 1, 16, and 42-43 under 35 U.S.C. §112, second paragraph, for allegedly failing to particularly point out and distinctly claim the subject matter.

As discussed, claims 1, 16 and 42-43 have been amended to more clearly define the invention. Exemplary support for the claims is provided herein (*See, e.g.*, Sections I and V). It is believed that the amended claims comply with 35 U.S.C. §112, second paragraph. Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. § 112, ¶ 2 rejections.

IV. Applicant's Previous Amendments Address The Claim Objections

The Examiner objects the specification, stating that “a compensation filter 43” at page 12, line 8 should be “a compensation filter 33.” In Applicant's previous response, the reference number for “compensation filter” in the drawings and specification were amended to change “33” to “43” thus Applicant believes the specification objection is moot given these changes. Applicant, accordingly, respectfully requests reconsideration and withdrawal of the objection.

V. Applicant's Claim Amendments Are Fully Supported By Applicant's Specification

Claims 1, 2, 4, 5, 16, 17, 19, 21, 22, 25, 27, 30, 31, 32, 34, 35, 39-44, and 51-54 have been amended to better describe the present invention. Claim 23 has been cancelled without prejudice or disclaimer. The amendments to the claims are fully supported by the application as originally filed.

In particular, support for the amendment made to claim 1 can be found in at least the following places in the originally filed application: page 15, lines 1-12, page 11, line 1-page 12, line 6 and Fig. 3 for “determining coefficients for a first filtering function ...”; page 12, lines 7-10, page 13, lines 17-21, page 15, line 12, page 16, lines 11-16, and Fig. 3 for “providing the coefficients for the first filtering function to”

Support for the amendment made to claim 16 can be found in at least the following places in the originally filed application: Fig. 3 and the corresponding description for “a module having the first microphone receives the audio output ...”; page 11, line 1-page 12, line 6, page 15, lines 1-12 and Fig. 3 for “a determining circuit for determining first coefficients for a first filtering function ...”; page 12, lines 7-10, page 13, lines 17-21, page 15, line 12, page 16, lines 11-16, and Fig. 3 for “a first equalization filter for filtering an output from the module ...”. For example, in one embodiment, elements 21a, 22a, and 23a in Fig. 3 form a “module”, and element 37 in Fig. 3 filters outputs from the element 23a.

Exemplary support for the amendments made to claims 42 and 43 can be found in the above identified places in the originally filed application.

Support for the amendments made to 51-54 can found, for example, at page 11, line 1-page 12, line 10 and page 13, lines 17-21 of the original specification.

Given the above, it is respectfully submitted that no new matter has been introduced by way of the amendments to the claims.

VI. Applicant's Claims Are Patentable In Accordance With 35 U.S.C. § 103

The Examiner rejects Claims 1-5, 7-8, 11, 14-23, 26, 29-31, 33-46, and 51-54 under U.S.C. §103(a) as being unpatentable over Vaughn (US Patent No. 5,233,655), hereinafter referred to as Vaughn, in view of Hamabe (US Patent No. 5,426,703), hereinafter referred to as Hamabe. The Examiner further rejected claims 12-13, 25, 27, 32, and 47-48 under U.S.C. §103(a) as being unpatentable over Vaughn in view of Hamabe, further in view of T. Schneider

et al., J. Audio Eng. Soci., Vol. 41, No. 7/8 1993, pp. 583-593, hereinafter referred to as Schneider. The Examiner further rejected claims 49-50 as being unpatentable over Vaughn in view of Hamabe, further in view of R. A. Roberts et al., "Digital Signal Processing" pp. 486-489.

Applicant respectfully requests reconsideration and withdrawal of the rejections for reasons set out below:

The present application generally discloses a method, an apparatus and sound system of equalizing output signals from a first microphone and a second microphone by using a first predictable noise and a second predictable noise. The first predictable noise is converted to an audio output using a converter having a known transfer function. The audio output is received at a signal path (a module) having the first microphone, and converted to a first output noise. The second predictable noise is synchronized to the first predictable noise in time, by using a synchronizer. The second predictable noise is compensated for the known transfer function by a compensation filter, by which a second output noise is outputted.

Coefficients representing the first transfer function (M1) of the first microphone are determined based on the first and second output noises. Coefficients for a first filtering function (H1) are then determined for the first microphone based on a single selected function (F) for the first and second microphones and the coefficients representing the first transfer function (M1), so that the product of the first transfer function (M1) and the first filtering function (H1) is the single selected function (F), which equals a second product of a second transfer function (M2) of the second microphone and a second filtering function (H2) for the second microphone, i.e. $M1*H1=F$ and $M2*H2=F$. See page 11, lines 2-23 of the description.

Vaughn teaches a white noise 44a and a pink noise 44b which may be selected by a signal selector/combiner 26 to be input into the bandpass filters. See Figure 1, column 5, line 59, and column 6, lines 8-10 of Vaughn. As clearly shown in Fig. 1 of Vaughn, outputs from the noise generators 44a and 44b are not provided to a microphone 20. Vaughn does not provide any outputs from these noise generators 44a and 44b to the microphone 20 to determine coefficients representing a transfer function of the microphone (see Fig. 1 of Vaughn).

By contrast, according to the present application and currently pending claims, a first predictable noise is provided to a microphone to obtain a first output noise. A second predictable noise is synchronized with the first predictable noise in time. Coefficients representing a transfer function of the first microphone are determined based on the first output noise and a second

output noise that is associated with the second predictable noise.

Furthermore, Vaughn fails to disclose or suggest determining coefficients for a first filtering function based on a single selected function and the transfer function that is determined based on the first and second output noises.

In addition, as discussed in the response to the previous office action, it should be apparent to a person skilled in the art that a pink noise is a signal with a frequency spectrum such that the power spectral density is proportional to the reciprocal of the frequency, and cannot be synchronized to a white noise in time.

Hamabe offers nothing to overcome the basic deficiencies of Vaughn. Furthermore, as submitted in the previous response, in Hamabe, the audio output from the loudspeaker varies with the time due to the properties of the environmental noise, hence identification of the microphone transfer function is not possible by Hamabe.

The other cited references cannot add any teaching to Vaughn and Hamabe to render claims 1, 16, 42, and 43 unpatentable. Hence it is respectfully submitted that claims 1, 16, 42, and 43 and their dependent claims are patentable in view of the cited references for at least the reasons provided above.

VII. Fees & Express 37 CFR § 1.114 Continued Examination Request

This *Response* is being filed within three months of the 15 November 2007 *Office Action* and with no new claims. Thus, no claims or extension fees are believed due. Applicant does request continued examination pursuant to 37 CFR § 1.114 and submits the undersigned submits the required RCE fee via EFS-Web. Applicants believe that no additional fees are due, however, the Commissioner is authorized to charge any other fees to Deposit Account No. 20-1507.

VIII. Conclusion

The foregoing is believed to be a complete response to the *Office Action* mailed 15 November 2007. Applicant respectfully asserts that the pending claims are in condition for allowance and respectfully requests passing of this case in due course of patent office business. If the Examiner believes there are other issues that can be resolved by a telephone interview, or there are any informalities remaining in the application which may be corrected by an Examiner's amendment, a telephone call to Hunter Yancey at (404) 885-3696 is requested.

Respectfully submitted,

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